

USMC Enlisted Endstrength Model

**MORS Workshop
Personnel and National Security:
A Quantitative Approach**

**Working Group #2:
Models for Managing Retention**

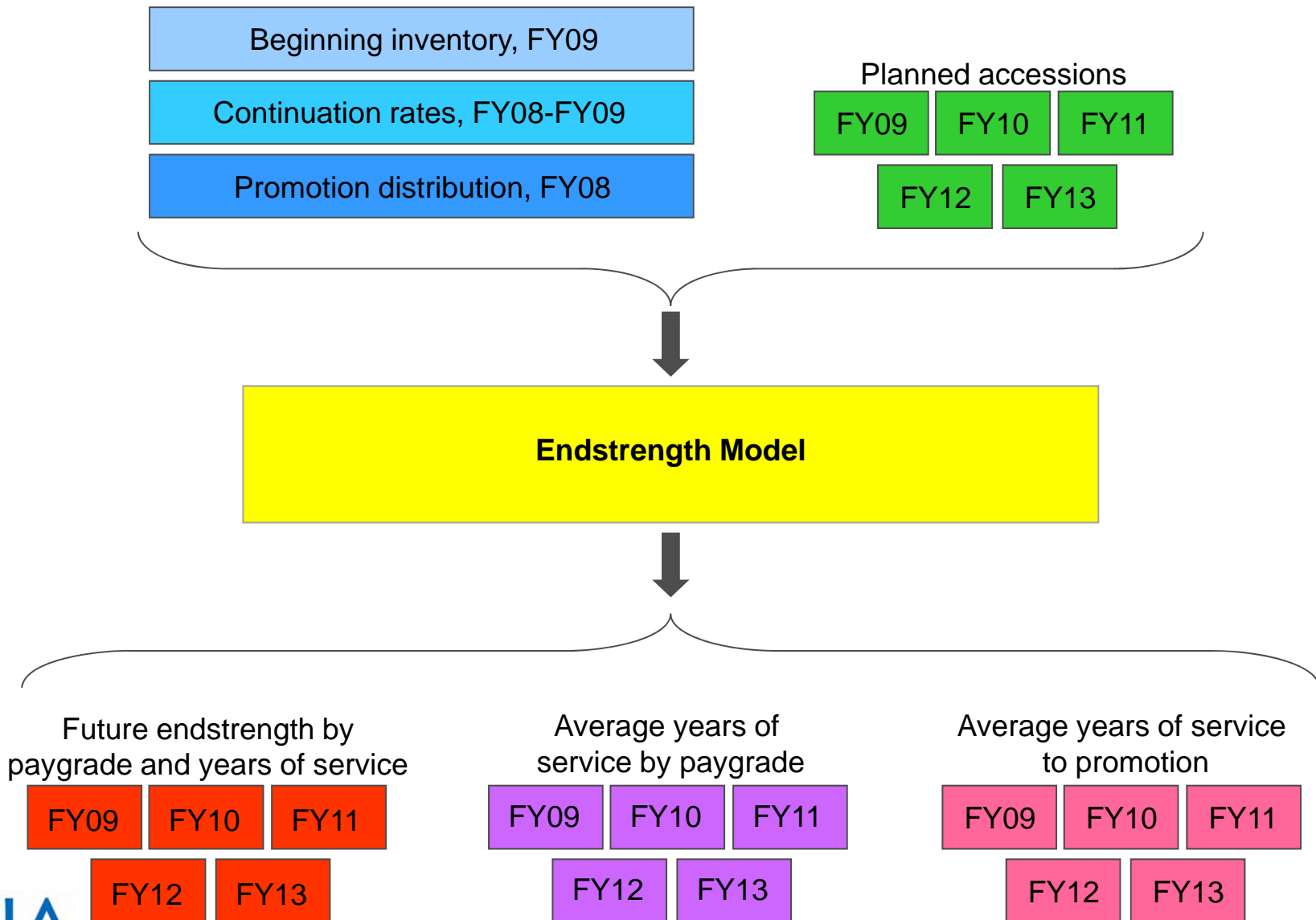
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January 27, 2009

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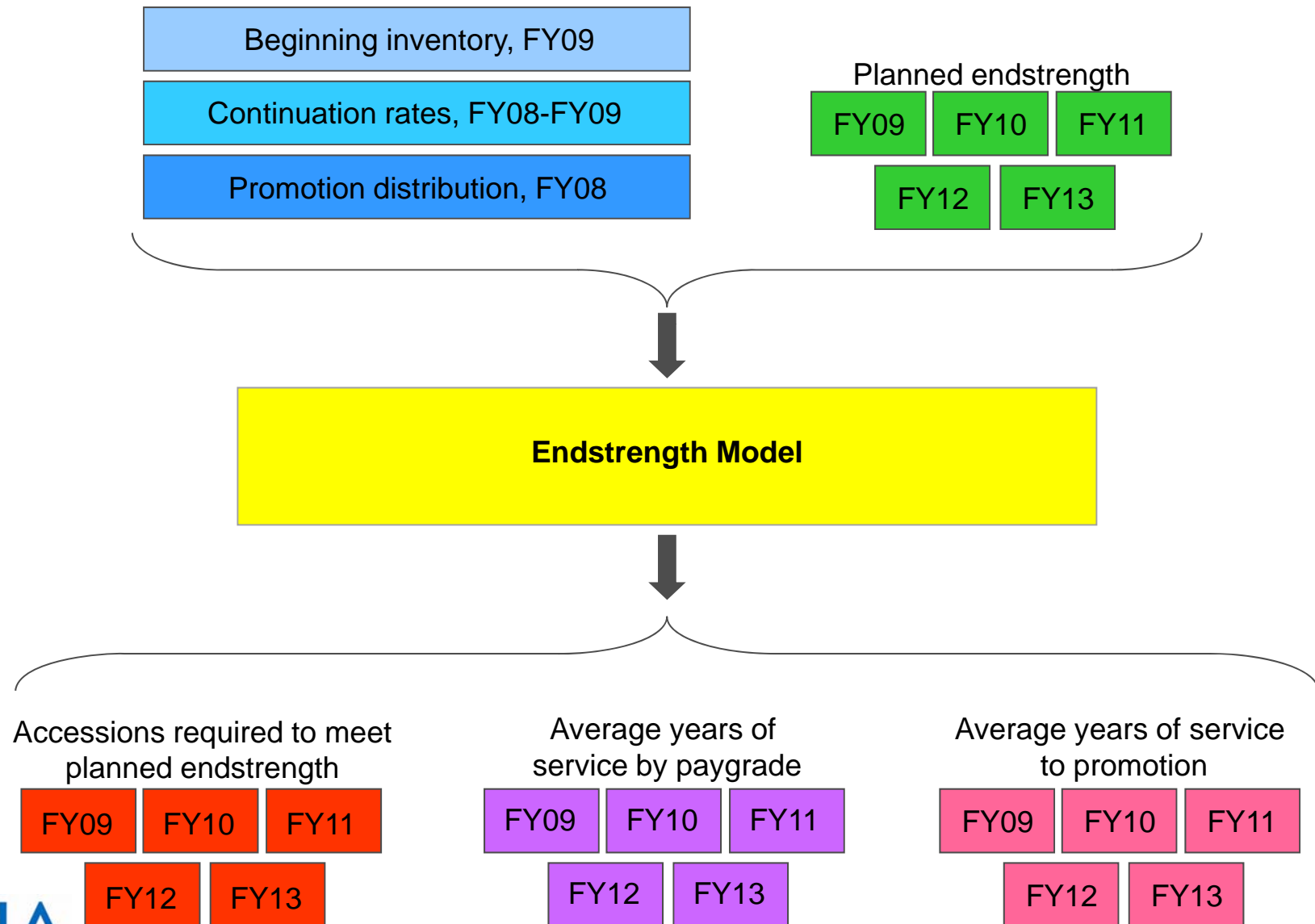
Background

- This model is an adaptation of an earlier CNA model developed to simulate endstrength changes during the 1990s force drawdown
- The model was updated for use in a project examining various aspects and future sustainability of a USMC force of 202K
 - Predict future enlisted endstrength fixing accessions, or future accessions fixing enlisted endstrength
 - Scenario simulations (ex: change in continuation rates)
- In today's session, I will demonstrate the model's functionality and present some results from scenario simulations

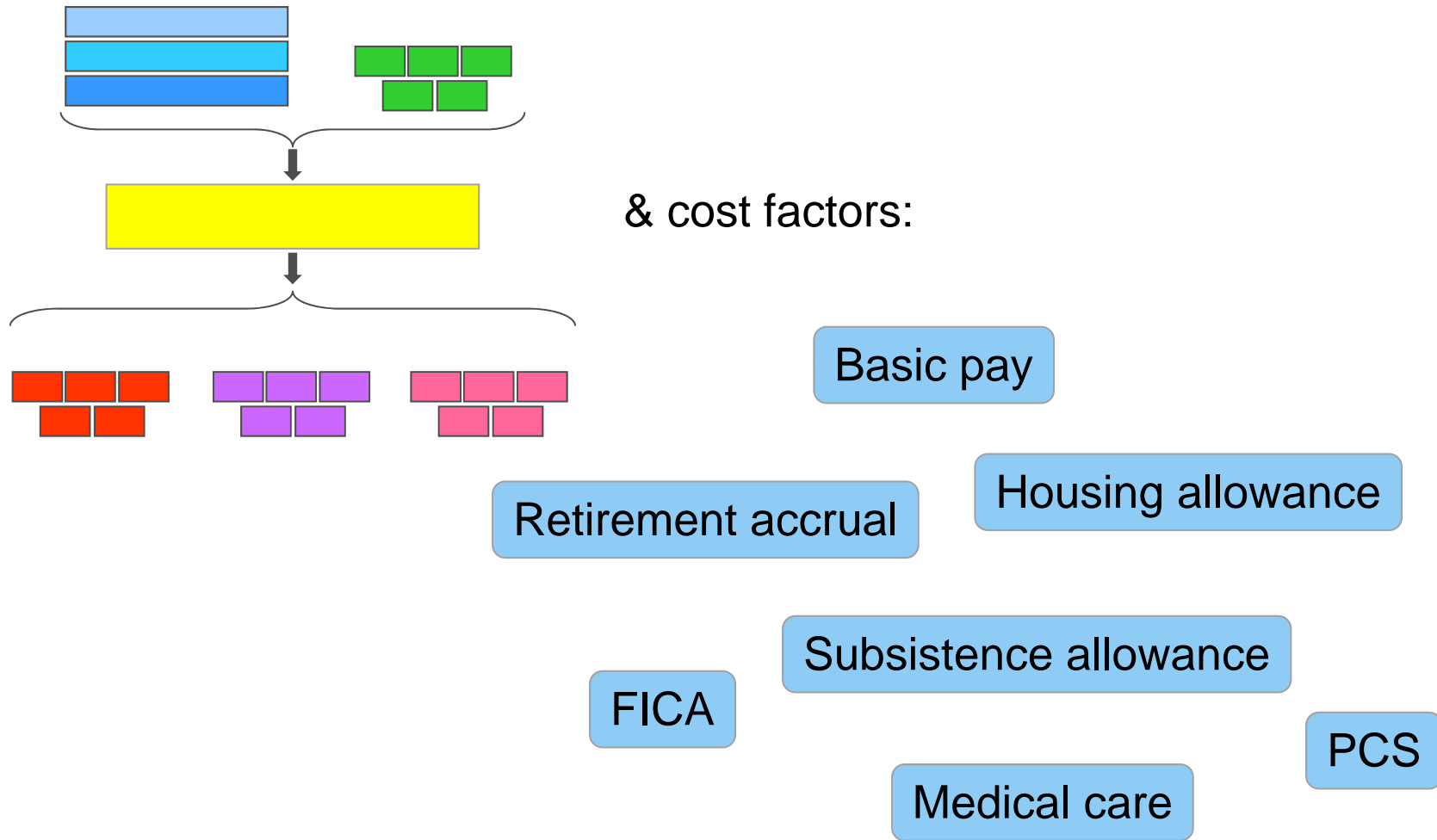
Endstrength Model overview: Projecting endstrength



Endstrength Model overview: Projecting accessions



Cost factors applied to the model's projections



Beginning FY	2009
Modify Beginning Inventory	

Modify Pay Table
Modify BAH Costs
Modify Retirement Costs
Modify Other Costs
Modify Inflation Factors
Modify Continuation Rates
Modify Initial Promotion Distribution

<input checked="" type="checkbox"/> 2009	<input type="checkbox"/> 2010	<input type="checkbox"/> 2011	<input type="checkbox"/> 2012	<input type="checkbox"/> 2013
Modify Loss\Gain Adjustments for FY				
Modify Planned ES for Selected FY				

42	% Accession For First Half of FY
.88	Survival Rate For First Half of FY
.95	Survival Rate For Second Half of FY

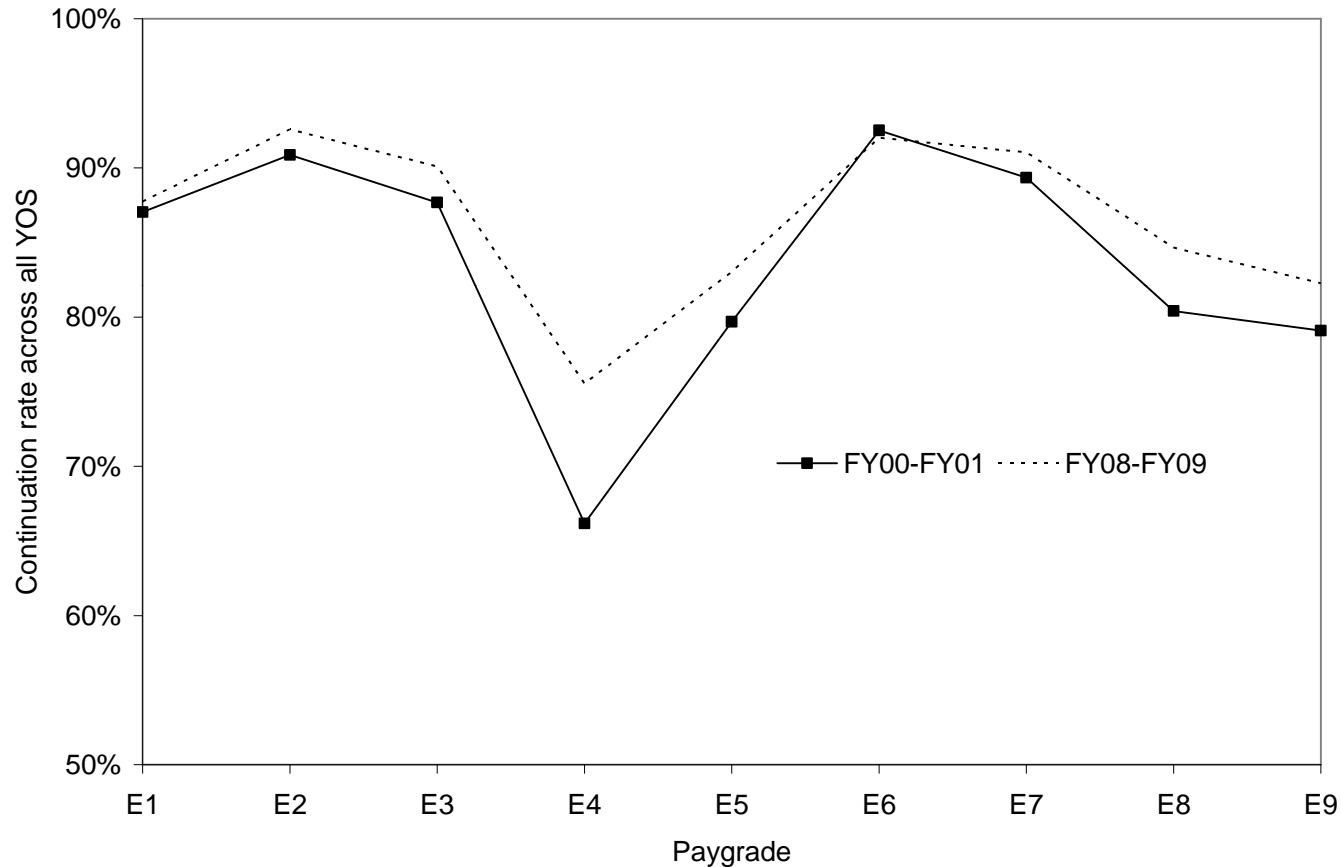
31400	2009 Accessions
28000	2010 Accessions
31500	2011 Accessions
34000	2012 Accessions
33000	2013 Accessions

47.5	% Accession survivors that are E2s
5.6	% Accession survivors that are E3s
.0	% Accession survivors that are E4s
20.2	% YOS1 survivors that are E2s
72.4	% YOS1 survivors that are E3s
4.6	% YOS1 survivors that are E4s
3.9	% YOS2 survivors that are E2s
55.2	% YOS2 survivors that are E3s

<input type="checkbox"/>	Endstrength Plan Mode (Leave unchecked for Accession Plan Mode)
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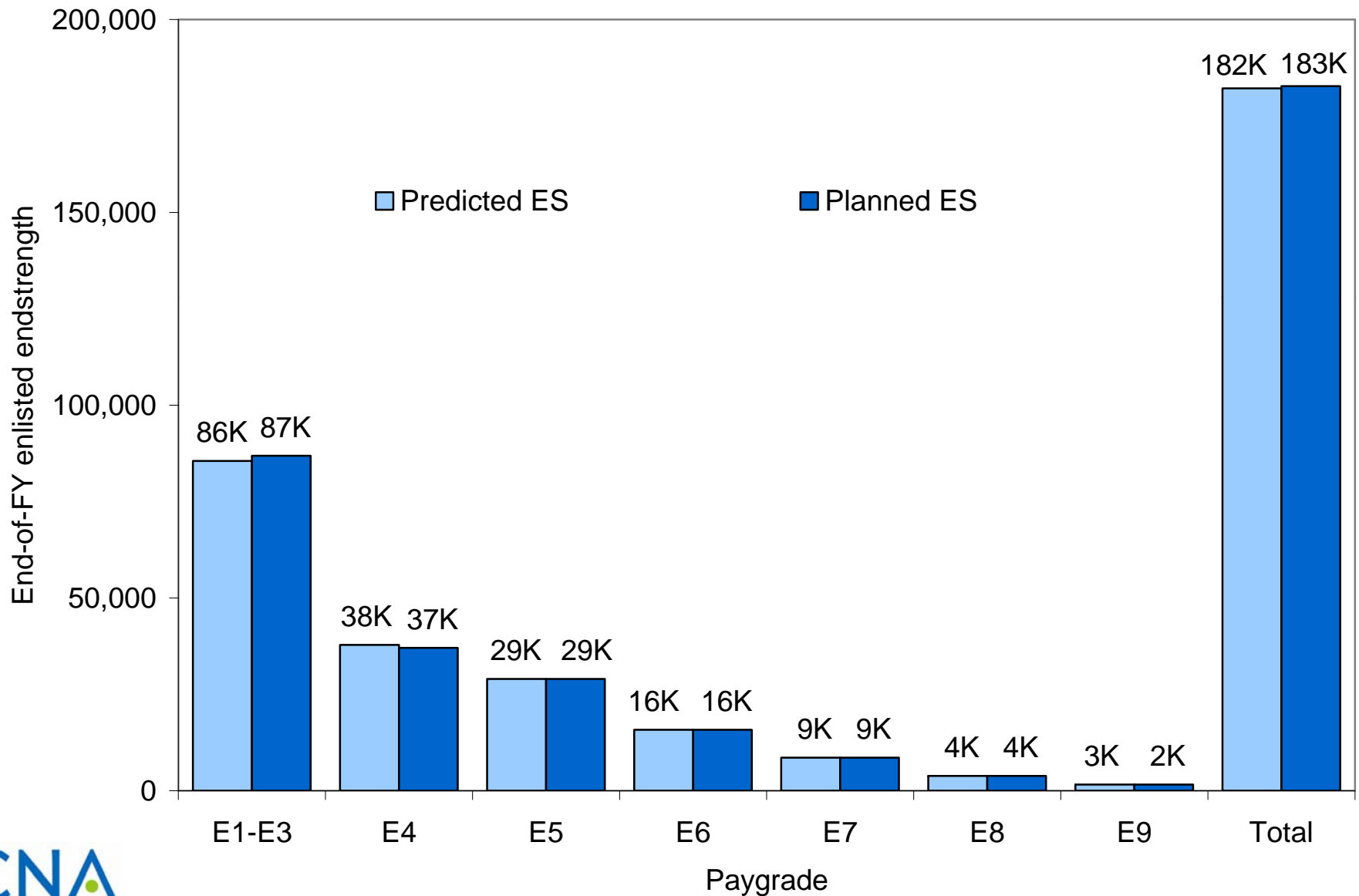
Scenario 1: Force sustainment with high continuation rates

FY08-FY09 continuation rates are 3.1% higher on average than FY00-FY01

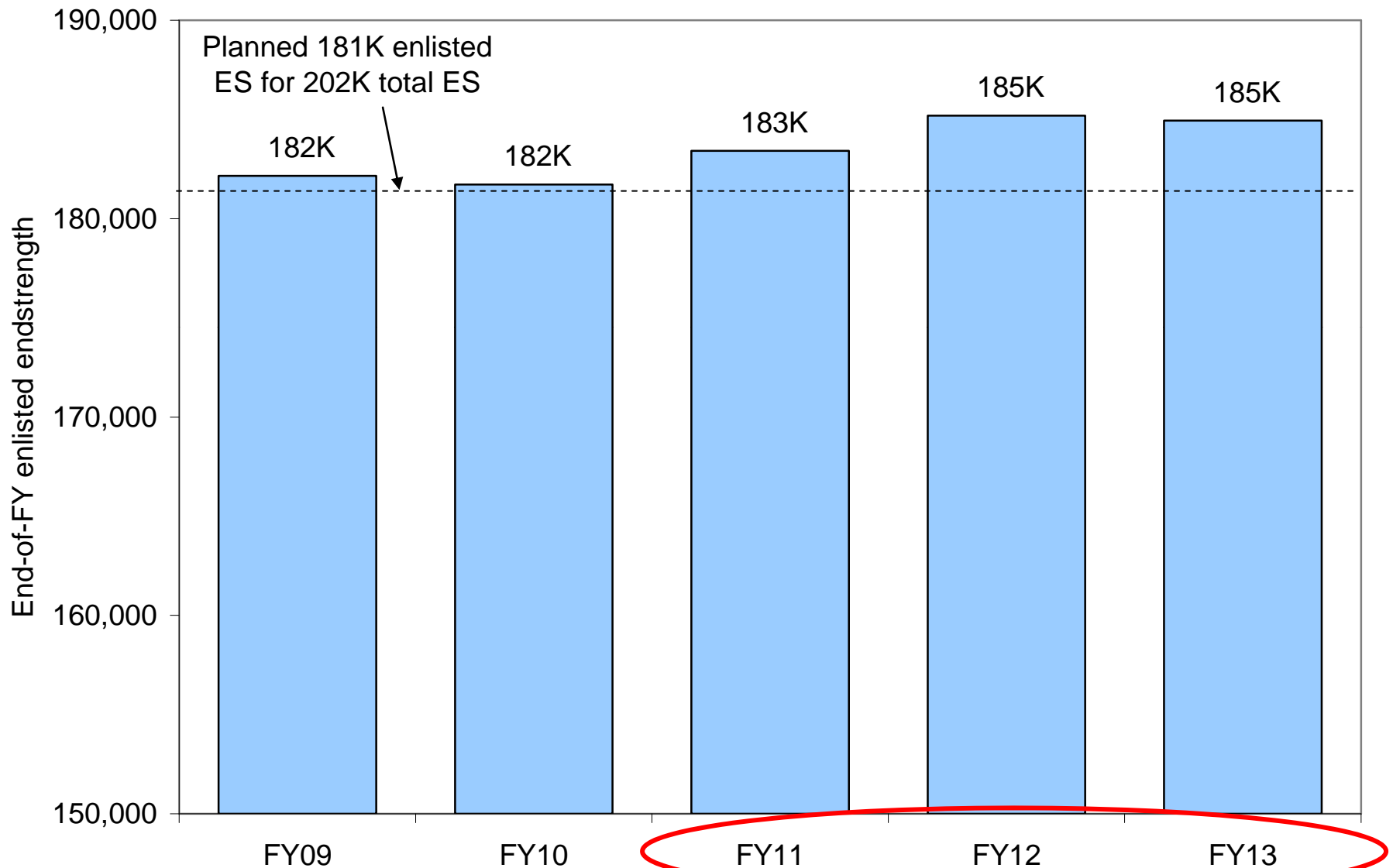


➡ Assume continuation rates stay high through FY 13

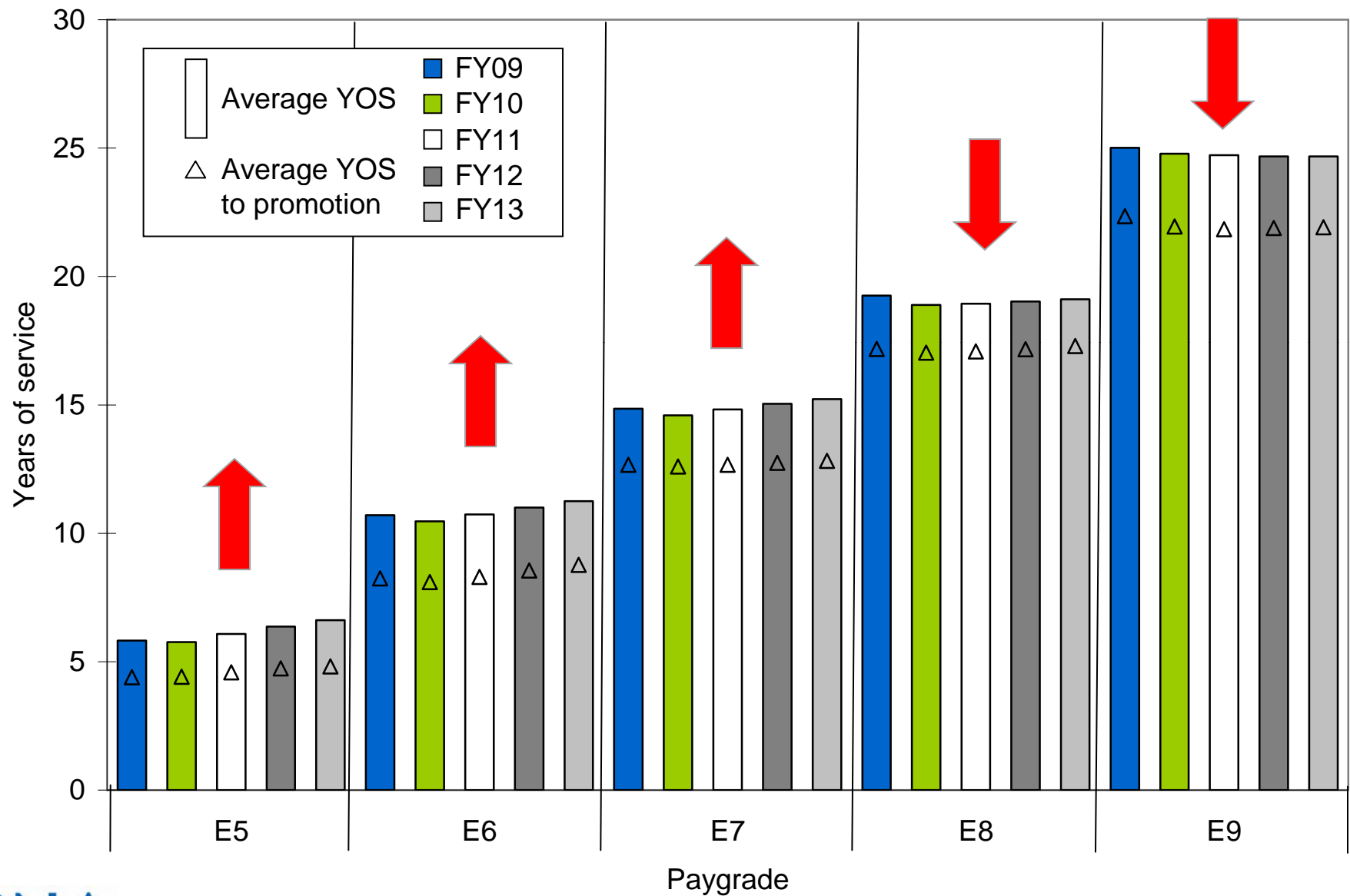
Scenario 1: End of FY09, model ES meets planned ES



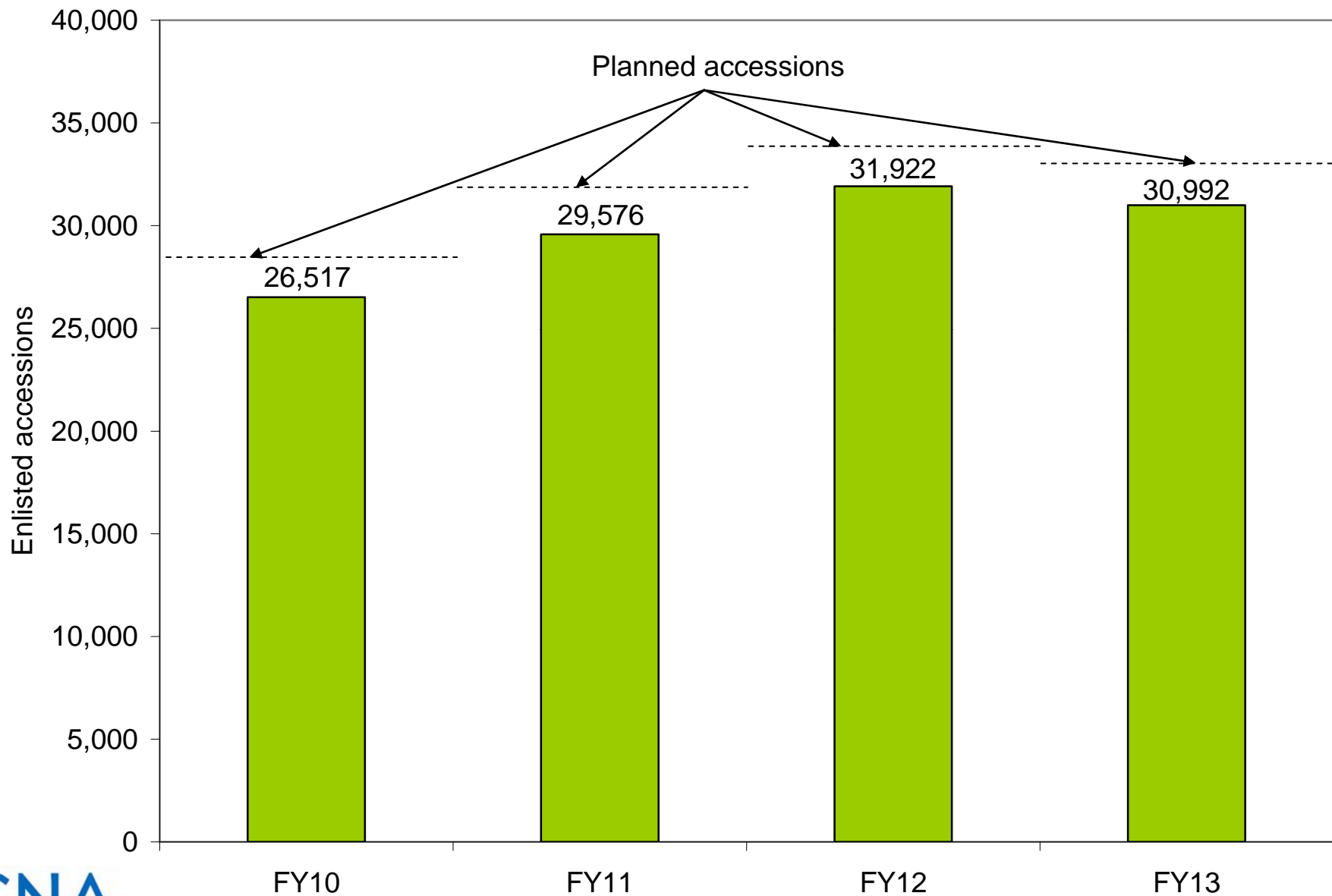
Scenario 1: FY11-FY13, model ES exceeds planned ES



Scenario 1: FY09-FY13, seniority and time to promotion



Scenario 1: FY10-FY13 planned accessions are too high



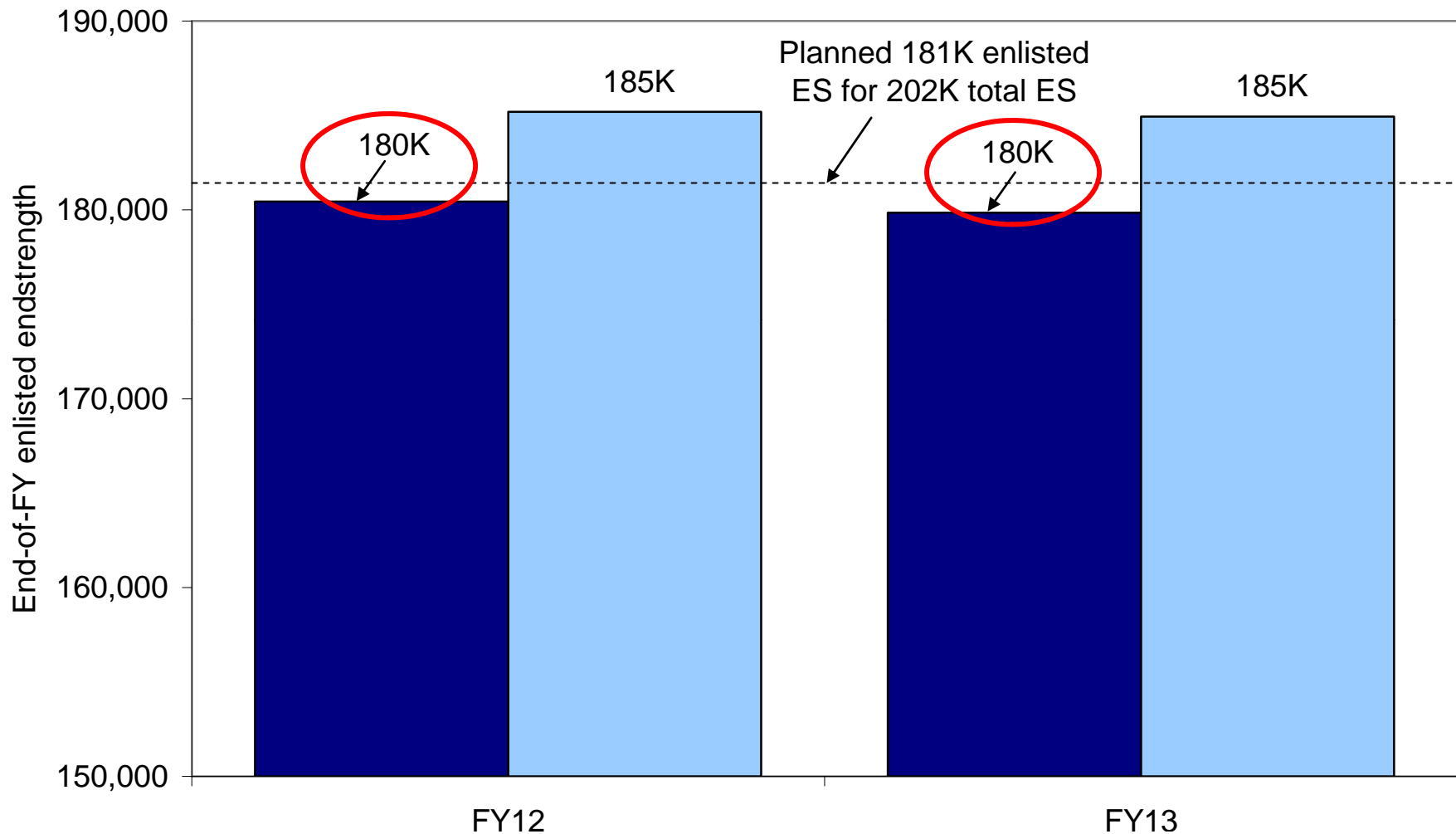
Scenario 1: Cost of the force will grow through FY13

- Cost would increase by 15% over the next five years, from \$15.7 billion in FY09 to \$18.0 in FY13 (in constant FY09 dollars)
 - Excludes advertising, enlistment bonus, SRB, and other reenlistment/separation incentive costs
- Most of the increase can be attributed to increases in basic pay outlays, which would rise by 19%, or from \$5.5 billion to \$5.7 billion
 - 92% of this is due to rising seniority among the ranks
 - Even if the force size stayed constant, increasing seniority alone would cause basic pay outlays to increase by 17%

Scenario 2: Force sustainment, “normal” continuation rates

- This scenario assumes that continuation rates remain at the FY08-FY09 level through FY11 and then drop to the FY00-FY01 level in FY12 and FY13
- This drop in continuation rates could come about due to
 - SRB budget reductions
 - High take-up of the post-9/11 GI Bill
 - Higher NEAS attrition rates
 - Stricter enforcement of ECFC policies
 - Separations caused by promotion stagnation to the middle and upper paygrades due to deviations from standard career progression precipitated by rapid 202K growth

Scenario 2: FY12-FY13, model ES meets planned ES



Scenario 2: Seniority, time to promotion, and cost

- Similar impact on average YOS and average YOS to promotion as in scenario 1, but smaller magnitudes
 - Relative to high continuation rates, “normal” continuation rates cause seniority and time to promotion to increase by less
- Cost of the force remains flat at \$15.7 billion through FY13
- Near-zero growth in basic pay outlays
 - Marginally smaller force in FY12 and FY13
 - v.
 - Slightly more senior force in FY12 and FY13 than in earlier years

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Back up slides

FY 2009 Beginning Inventory

	Paygrade								
	E1	E2	E3	E4	E5	E6	E7	E8	E9
0	15,278	16,907	1,841	4	5	9	0	0	0
1	771	5,857	20,963	1,338	12	6	0	0	0
2	326	992	13,885	9,708	253	10	0	0	0
3	215	506	5,566	15,665	2,406	17	0	1	1
4	61	77	760	6,449	6,057	24	0	0	0
5	33	26	172	2,055	6,179	123	7	0	0
6	17	15	89	607	5,006	545	7	1	0
7	17	8	42	304	3,959	1,126	5	0	0
8	11	2	13	93	2,162	1,832	16	0	1
9	6	0	6	45	1,068	2,266	53	0	0
10	6	1	1	27	667	2,348	165	2	0
11	1	1		11	439	2,144	537	2	0
12	4	1	3	11	224	1,466	925	4	0
13	4	0	0	2	35	926	1,058	28	1
14	0	0	0	1	17	622	1,141	70	1
15	2	0	0	0	9	545	1,161	164	4
16	3	2	0	0	2	388	969	293	4
17	2	1	0	1	5	325	736	447	7
18	2	0	0	0	3	258	607	565	14
19	2	0	1	1	2	195	521	626	26
20	1	0	0	0	0	25	202	505	49
21	1	0	0	0	1	4	93	410	86
22	0	0	0	0	0	0	22	327	108
23	1	0	0	0	0	1	7	220	156
24	0	0	0	0	0	0	1	168	216
25	1	0	0	0	0	0	0	55	203
26	0	0	0	0	0	1	1	34	195
27	1	0	0	0	0	0	0	4	192
28	2	0	0	0	0	0	0	2	154
29	2	0	0	0	0	0	0	0	147
30	5	0	2	0	0	0	0	0	43

SAVE

BACK

FY 2008-2009 Continuation Rates

	Paygrade								
	E1	E2	E3	E4	E5	E6	E7	E8	E9
0	0.91	0.95	0.97	0.43	0.03	1.00	0.00	0.00	0.00
1	0.69	0.94	0.97	0.98	0.84	1.00	0.00	0.00	0.00
2	0.50	0.86	0.96	0.98	0.94	1.00	0.00	0.00	0.00
3	0.20	0.30	0.47	0.58	0.62	0.76	1.00	0.00	0.00
4	0.22	0.37	0.43	0.70	0.78	0.95	1.00	0.00	0.00
5	0.38	0.64	0.76	0.92	0.95	0.91	1.00	0.00	0.00
6	0.32	0.86	0.81	0.88	0.96	0.97	0.80	0.00	0.00
7	0.20	0.25	0.29	0.45	0.77	0.85	0.79	0.00	0.00
8	0.38	0.00	0.30	0.49	0.85	0.88	0.96	0.00	0.00
9	0.36	0.00	0.50	0.70	0.92	0.94	0.94	1.00	0.00
10	0.00	0.00	1.00	0.60	0.91	0.94	0.92	1.00	0.00
11	0.40	0.00	1.00	0.47	0.76	0.93	0.91	1.00	0.00
12	0.40	0.00	0.00	0.25	0.40	0.95	0.95	0.83	0.50
13	0.00	0.00	0.00	0.00	0.61	0.96	0.97	1.00	1.00
14	0.20	0.00	0.00	0.00	0.69	0.95	0.97	1.00	0.00
15	0.33	0.00	0.00	0.00	0.67	0.97	0.97	0.98	1.00
16	0.33	0.00	0.00	0.00	0.86	0.96	0.99	1.00	1.00
17	0.50	0.00	0.00	0.00	0.75	0.98	0.99	1.00	1.00
18	1.00	0.00	1.00	0.00	0.60	1.00	1.00	1.00	1.00
19	0.50	0.00	0.00	0.00	0.14	0.12	0.48	0.83	0.96
20	0.00	0.00	0.00	0.00	0.00	0.12	0.48	0.78	0.90
21	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.79	0.90
22	0.50	0.00	0.00	0.00	0.00	0.50	0.31	0.79	0.93
23	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.77	0.89
24	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.91
25	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.58	0.88
26	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.89
27	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.88
28	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.88
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
30	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.19

SAVE

BACK

FY 2008 Promotion Distribution

	Paygrade							
	E2	E3	E4	E5	E6	E7	E8	E9
0	0.96	0.73	0.03	0.00	0.00	0.00	0.00	0.00
1	0.03	0.24	0.45	0.02	0.00	0.00	0.00	0.00
2	0.01	0.03	0.42	0.22	0.00	0.00	0.00	0.00
3	0.00	0.01	0.08	0.42	0.00	0.00	0.00	0.00
4	0.00	0.00	0.01	0.22	0.02	0.00	0.00	0.00
5	0.00	0.00	0.00	0.08	0.11	0.00	0.00	0.00
6	0.00	0.00	0.00	0.03	0.19	0.00	0.00	0.00
7	0.00	0.00	0.00	0.01	0.25	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.21	0.01	0.00	0.00
9	0.00	0.00	0.00	0.00	0.11	0.06	0.00	0.00
10	0.00	0.00	0.00	0.00	0.06	0.19	0.00	0.00
11	0.00	0.00	0.00	0.00	0.03	0.26	0.00	0.00
12	0.00	0.00	0.00	0.00	0.01	0.22	0.02	0.00
13	0.00	0.00	0.00	0.00	0.00	0.12	0.04	0.00
14	0.00	0.00	0.00	0.00	0.00	0.06	0.10	0.01
15	0.00	0.00	0.00	0.00	0.00	0.04	0.17	0.00
16	0.00	0.00	0.00	0.00	0.00	0.02	0.22	0.01
17	0.00	0.00	0.00	0.00	0.00	0.01	0.21	0.03
18	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.05
19	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.07
20	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.15
21	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.14
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Years of
service

SAVE

BACK

FY 2009 Loss/Gain Adjustments

	Paygrade								
	E1	E2	E3	E4	E5	E6	E7	E8	E9
0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0

Years of
service

SAVE

BACK

FY 2009 Planned Endstrength

Paygrade	Planned endstrength
E1	11,478
E2	23,614
E3	51,776
E4	37,026
E5	29,003
E6	15,832
E7	8,572
E8	3,837
E9	1,578
Total	182,716

SAVE

BACK